IN THE CLAIMS:

1. (previously presented) An automatic transfer switch controller comprising:

at least one transformer to convert power from utility and generator power sources into power supply voltages for powering said controller and into voltages to be sensed by said controller;

a power supply circuit to regulate and filter signals from said transformer;

a solenoid driver circuit to drive automatic transfer switch solenoids that are configured to facilitate a supply of power from one of said utility and generator power sources;

an embedded microcontroller configured to control logic functions and to monitor voltages from said utility and generator power sources;

a voltage sense signal conditioning circuit for filtering signals provided to said microcontroller, wherein at least two of said microcontroller, solenoid driver circuit and voltage sense signal conditioning circuit are located on a control circuit board;

a user interface operationally coupled to said microcontroller for operator entry of instructions; and

at least one LED indicator interfaced to said microcontroller to indicate operator entry of instructions at said user interface.

2. (original) A controller according to Claim 1 wherein said microcontroller comprises at least one analog-to-digital converter.

3. (currently amended) A controller according to Claim 2 wherein said voltage sense signal conditioning circuit comprises low pass filters configured to remove noise from the power supply voltages thereby enabling said microcontroller analog-to-digital converter to correctly sense voltage and frequency.

4. (original) A controller according to Claim 1 wherein said solenoid driver circuit is configured with relays for powering automatic transfer switch drive solenoids.

5. (original) A controller according to Claim 1 wherein said solenoid driver circuit is configured with solid state devices for powering automatic transfer switch drive solenoids.

6. (original) A controller according to Claim 1 wherein said microcontroller is configured to recognize jumper selections for an exerciser clock adjustable for settings for a preselected number of days.

7. (original) A controller according to Claim 1 wherein said microcontroller is configured to recognize jumper selections for supply voltages for at least one of 120 VAC, 208 VAC, 220 VAC and 240 VAC.

8. (original) A controller according to Claim 1 wherein said transformer is configured for supply voltages of at least one of 380 VAC, 415 VAC, 440 VAC and 480 VAC, said microcontroller is configured to recognize jumper selections for supply voltages for at least one of 380 VAC, 415 VAC, 440 VAC and 480 VAC.

9. (original) A controller according to Claim 1 further comprising a generator control board configured to interface with said microcontroller and to sense at least one of oil pressure and temperature.

10. (original) A controller according to Claim 9 wherein said generator control board is configured with a set of dry contact outputs for starter motor control including at least one of a fuel/run contact output and a start contact output.

11. (original) A controller according to Claim 1 further comprising a three phase sense board configured to expand single phase sensing capabilities of said controller to three phase sensing on utility and generator sources.

12. (original) A controller according to Claim 1 further comprising a load shed I/O option board configured to disconnect loads before said controller transfers loads to a generator power source, preventing generator over load.

13. (original) A controller according to Claim 1 wherein said microcontroller is configured with at least one of a generator cool down timer, a generator warmup timer, a loss of power delay timer, a generator fail-to-start timer, a generator crank timer, a generator pause timer, a generator overload timer and an utility stabilization before switchback timer.

14. (original) A controller according to Claim 1 wherein said microcontroller is configured to recognize jumper selections for frequencies of 50 Hz and 60 Hz.

15. (previously presented) An automatic transfer switch system comprising:

an input configured to be connected to a utility power source;

an input configured to be connected to a generator power source;

a transfer switch configured to switch a load from said utility power source to said generator power source and further configured to switch the load back to said utility power source; and

an automatic transfer switch controller comprising:

at least one transformer to convert power from utility and generator power sources into power supply voltages for powering said controller and into voltages to be sensed by said controller;

a power supply circuit to regulate and filter signals from said transformer;

a solenoid driver circuit to drive automatic transfer switch solenoids that are configured to facilitate a supply of power from one of said utility and generator power sources;

an embedded microcontroller configured to control logic functions and to monitor voltages from said utility and generator power sources;

a voltage sense signal conditioning circuit for filtering signals provided to said microcontroller, wherein at least two of said microcontroller, solenoid driver circuit and voltage sense signal conditioning circuit are located on a control circuit board;

a user interface operationally coupled to said microcontroller for operator entry of instructions; and

at least one LED indicator interfaced to said microcontroller to indicate operator entry of instructions at said user interface.

16. (original) An automatic transfer switch system according to Claim 15 wherein said microcontroller further comprises at least one analog-to-digital converter.

17. (currently amended) An automatic transfer switch system according to Claim 16 wherein said voltage sense signal conditioning circuit comprises low pass filters configured to remove noise from the power supply voltages thereby enabling said microcontroller analog-to-digital converter to correctly sense voltage and frequency.

18. (original) An automatic transfer switch system according to Claim 15 wherein said solenoid driver circuit is configured with relays for powering automatic transfer switch drive solenoids.

19. (original) An automatic transfer switch system according to Claim 15 wherein said solenoid driver circuit is configured with solid state devices for powering automatic transfer switch drive solenoids.

20. (original) An automatic transfer switch system according to Claim 15 wherein said microcontroller is configured to recognize jumper selections for an exerciser clock adjustable for a preset number of days.

21. (original) An automatic transfer switch system according to Claim 15 wherein said microcontroller is configured to recognize jumper selections for supply voltages for at least one of 120 VAC, 208 VAC, 220 VAC and 240 VAC.

22. (original) An automatic transfer switch system according to Claim 15 wherein said transformer is configured for supply voltages of at least one of 380 VAC, 415 VAC, 440 VAC and 480 VAC, said microcontroller is configured to recognize jumper selections for supply voltages for at least one of 380 VAC, 415 VAC, 440 VAC and 480 VAC.

23. (original). An automatic transfer switch system according to Claim 15 wherein said controller further comprises a generator control board configured to interface with said microcontroller and to sense at least one of oil pressure and temperature.

24. (original) An automatic transfer switch system according to Claim 23 wherein said generator control board is configured with a set of dry contact outputs for starter motor control including at least one of a fuel/run contact output and a start contact output.

25. (original) An automatic transfer switch system according to Claim 15 wherein said controller further comprises a three phase sense board configured to expand single phase sensing capabilities of said controller to three phase sensing on utility and generator sources.

26. (original) An automatic transfer switch system according to Claim 15 wherein said controller further comprises a load shed I/O option board configured to disconnect loads before said controller transfers loads to a generator power source, preventing generator over load.

27. (original) An automatic transfer switch system according to Claim 15 wherein said microcontroller is configured with at least one of a generator cool down timer, a generator warmup timer, a loss of power delay timer, a generator fail-to-start timer, a generator crank timer, a generator pause timer, a generator overload timer and an utility stabilization before switchback timer.

28. (original) An automatic transfer switch system according to Claim 15 wherein said microcontroller is configured to recognize jumper selections for frequencies of 50 Hz and 60 Hz.

29. (currently amended) An automatic transfer switch controller configured to control an automatic transfer switch that switches between providing power from a utility power source and from an alternate power source, said controller comprising a configuration section including a jumper ~~panel used~~panel that is built within said controller and that is configured to select a cycle for a clock.

30. (previously presented) A controller in accordance with Claim 29 wherein said clock is an exercise clock located within said controller.

31. (previously presented) A controller in accordance with Claim 29 wherein the cycle is one of a 7 day, a 14 day, a 21 day, and a 28 day cycle.

32. (canceled)

33. (previously presented) A controller in accordance with Claim 29 wherein said controller comprises a microcontroller and said configuration section is used to configure said microcontroller by selecting at least one of a voltage and a frequency provided to said microcontroller.

34. (previously presented) A controller in accordance with Claim 33 wherein the voltage is one of 120 volts, 208 volts, 220 volts, and 240 volts.

35. (previously presented) A controller in accordance with Claim 33 wherein the voltage is one of 380 volts, 415 volts, 440 volts, and 480 volts.

36. (previously presented) A controller in accordance with Claim 33 wherein the frequency is one of 50 hertz and 60 hertz.

37. (currently amended) A controller in accordance with Claim 33 further comprising:

jumpers installed to ~~selected~~select one of the voltage and frequency provided to said microcontroller.

38. (currently amended) An automatic transfer switch controller comprising at least one phase sense board ~~that enables~~configured to expand a capability of said controller ~~to sense one of single and multiple phases of signals provided from power sources.~~from single phase voltage sensing to multiple phase voltage sensing of voltages generated from one of a utility and an alternate power source.

39. (currently amended) A controller in accordance with Claim 38 wherein ~~the multiple phases include three phases.~~the multiple phase sensing includes sensing three phase voltages.

40. (currently amended) A controller in accordance with Claim 38 further comprising a microcontroller configured to monitor voltages and frequencies of said utility and alternate power sources.

41. (currently amended) A controller in accordance with Claim 40 wherein said microcontroller is located on a main control circuit board and said phase sense board is ~~one of~~ an option board.

42. (currently amended) An automatic transfer switch controller comprising ~~an embedded microcontroller configured to recognize jumper selections.~~jumpers that are located on a main control board on which a microprocessor is located and that are configured to receive jumper selections of frequencies and voltage levels sensed by said controller.

43. (currently amended) A controller in accordance with Claim 42 wherein the jumper selections include ~~at least one of~~ a selection for a cycle of a clock within said ~~controller, a selection of a voltage provided to said microcontroller, and a selection of a frequency provided to said microcontroller.~~controller.

44. (new) A controller in accordance with Claim 29 wherein said controller is configured to be coupled to an option board that disconnects at least one load before said controller transfers at least one of a plurality of loads from said utility power source to said alternate power source.

45. (new) A controller in accordance with Claim 42 further comprising a generator control board separate from said main control board, coupled to said main control board, and configured to sense functions of an alternate source that provides power to a load via an automatic transfer switch controlled by said controller, wherein the functions of said generator control board are accessed by said controller when a control bit is enabled.